

REMARKS

Information Disclosure Statement

The Examiner objected to the Information Disclosure Statement because there was no place for the Examiner's initials. Please find enclosed herewith a new Information Disclosure Statement, together with a fee.

Claim Objections

The Examiner objected to claims 48 and 51 because of an informality. These claims have been amended to overcome the informality, and Applicant respectfully requests withdrawal of the objections to claims 48 and 51.

35 U.S.C. § 102 Rejections

The Examiner has rejected claims 46-48 and 52 under 35 U.S.C. § 102(b) as being anticipated by Irinoda. The only independent claim is claim 46. Applicant submits that claim 46, as amended, is not anticipated by Irinoda.

Irinoda in Figure 9A illustrates an oxide layer 503 formed on first and second surfaces of a substrate 502. The oxide layer is patterned to expose a first portion and a second portion of the substrate (column 6, lines 30-50). The first portion of the exposed substrate is then isotropically etched to form a first portion of a deep-via opening 513A or 513B. A titanium barrier layer is then

sputtered, and a copper seed layer is sputtered into the first and second portions of the deep-via opening (column 17, lines 40-45). A conductive material is then electroplated over the seed layer to form a deep-via (column 17, lines 44-46). Vias and interconnect lines are then formed over the second surface of the substrate, as illustrated in Figure 9F.

It appears from the Examiner's action that the Examiner has taken the position that a copper barrier layer can be made of titanium. The Examiner reasons that the titanium is a barrier for the copper, and is therefore a "copper barrier layer." It is unclear to Applicant how the Examiner has reasoned and come to this conclusion. Be that as it may, claim 46 now includes additional limitations that distinguish over the cited reference.

What should be noted from Irinoda is that a photoresist layer 513 is formed on top of the oxide layer 503, and that the deep-via openings 513A and 513B are formed in the photoresist layer 513. Since the photoresist layer 513 is formed on top of the oxide layer 503, the oxide layer 503 does not and cannot be formed on inner surfaces of the deep-via openings 513A or 513B. Neither has the Examiner cited any reference that suggests that the oxide layer 503 can be formed in the deep-via openings 513A or 513B.

Claim 46 now includes the limitation that the oxide layer is formed on inner surfaces of the deep-via openings. Claim 46 thus includes at least one limitation that is not suggested by Irinoda. Applicant therefore submits that

claim 46 is not anticipated by Irinoda because claim 46 includes at least one limitation that is not disclosed by Irinoda.

Claims 47-48 and 52 depend from claim 46, and should be allowable for at least the same reasons as claim 46. Claim 49 has been cancelled. Applicant, accordingly, respectfully requests withdrawal of the rejections under 35 U.S.C. § 102(e) as being anticipated by Irinoda.

35 U.S.C. § 103 Rejections

The Examiner has also rejected claims 50-51 under 35 U.S.C. § 103(a) as being unpatentable over Irinoda. These claims depend from claim 46, and should be allowable for at least the same reasons as claim 46. Applicant, accordingly, respectfully requests withdrawal of the rejections of claims 50-51 under 35 U.S.C. § 103(a) as being unpatentable over Irinoda.

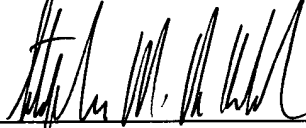
Applicant respectfully submits that the present application is in condition for allowance. If the Examiner believes a telephone conference would expedite or assist in the allowance of the present application, the Examiner is invited to call Stephen M. De Klerk at (408) 720-8300.

Please charge any shortages and credit any overages to Deposit Account No. 02-2666. Any necessary extension of time for response not already requested

is hereby requested. Please charge any corresponding fee to Deposit Account
No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP



Date: May 17, 2005

Stephen M. De Klerk
Reg. No. 46,503

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, California 90025-1026
(408) 720-8300